

REMARKS

Claims 1-5 remain pending in the application. The amended claim contained herein is of equivalent scope as originally filed and, thus, is not the result of a narrowing amendment. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102

Claims 1-4 stand rejected under 35 U.S.C. §102(e) as being anticipated by Xu (US 6,551,732). The rejection is respectfully traversed.

The Examiner's characterization of the Xu reference teaching use of a heat exchanger to make use of waste heat is simply not understood. Xu teaches feeding a substantial portion of the cathode effluent stream to a fuel processor as the oxygen containing gas and water vapor for converting the fuel stream into hydrogen. While Xu discloses an air compressor upstream of the fuel cell cathode, there is no disclosure or suggestion of using fuel cell-produced waste heat to add heat to the cathode exhaust via a heat exchanger. Applicant has no argument with the Examiner's assertion that fuel cell reactions are known to be exothermic and generate excess heat. But what is not taught, claimed or suggested by Xu or the remaining prior art of record is to recover that waste heat emanating from the fuel cell housing and to thermally couple that heat energy to the cathode exhaust gas line, thereby rendering the fuel cell system more energy efficient. While claim 1 in its original form is therefore believed to be patentably distinguishable over Xu, to expedite prosecution, claim 1 has been amended simply to clarify that "waste heat" issues from the fuel cell housing.

Xu contains no teaching or suggestion of taking waste heat from the housing of a fuel cell and transferring the waste heat energy to the cathode exhaust flow via a heat exchanger coupled between the fuel cell housing and the cathode exhaust gas line. Claim 1 and its depending claims 2-4 are therefore believed to be patentably distinguishable over Xu.

Claims 1-5 stand rejected under 35 U.S.C. §102(e) as being anticipated by Cownden et al (US 6,316,134). The rejection is respectfully traversed.

Again, the Examiner's characterization of Cownden et al is not understood. Cownden et al discloses a reformer, a fuel stream humidifier and a heat exchanger, all disposed within a furnace vessel associated with the fuel processing subsystem of a fuel cell system. Cownden et al further discloses that the fuel processing subsystem may further comprise a shift reactor that exchanges heat for the cathode exhaust stream directed to the shift reactor from the power generation system. After passing through the shift reactor, the cathode exhaust stream is preferably directed to the furnace burner. All of this deals with Cownden's fuel processing system—not with an expander coupled to a compressor for the cathode input air pressurization.

As with Xu, Cownden et al contains no teaching or suggestion of taking waste heat from the housing of a fuel cell and transferring the waste heat energy to the cathode exhaust flow via a heat exchanger coupled between the fuel cell housing and the cathode exhaust gas line. Claims 1-5 are therefore believed to be patentably distinguishable over Cownden et al.

REJECTION UNDER 35 U.S.C. §103

Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Xu in view of Cownden et al. The rejection is respectfully traversed.


Without acceding to the correctness of the Examiner's remarks thereover, claim 5 depends directly from claim 1 and is therefore believed to be in condition for allowance for at least the reasons set forth above with respect to claim 1.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 944-6519.

Respectfully submitted,

Dated: 8/18/06

By: 
Ralph Edwin Smith
Reg. No. 35,474

CIMS 483-02-19
DaimlerChrysler Intellectual Capital Corporation
DaimlerChrysler Tech. Center
800 Chrysler Drive
Auburn Hills, Michigan 48326-2757
Phone: 248-944-6519

Serial No. 10/622,165

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